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14. ABSTRACT
Web site design involves anticipating and understanding receivers' reactions to various web site attributes and using this information to make web sites more useful and satisfying for them. The study assessed objective and subjective characteristics via surveys of information technology experts and non-experts. Results from the study demonstrated associations between web site attributes and user reactions in at least two ways. First, results demonstrate the importance of message content and form in explaining variance in perceived usefulness and perceived ease-of-use constructs. Second, the results indicate that experts and non-experts differ in their perceptions, overall evaluations, and satisfaction with web sites.

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FINAL TECHNICAL REPORT

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INSTITUTION: The University of Memphis

GRANT TITLE: Impact of Computer-Mediated Communication Media Characteristics on Information Acquisition, Attitude Favorability, and Intentions toward Joining the Navy

AWARD PERIOD: 1 July 2001 - 30 September 2002

OBJECTIVE: To investigate the extent to which characteristics of computer-mediated communication media (CMCM) are associated with a receiver's communication outcomes.

APPROACH: A set of forty web sites was randomly selected from the Fortune 500 list of companies for use by two sets of college students. The first group, representing IT experts, examined objective characteristics of the web sites (e.g., amount of information, hyperlink functionality). This group included approximately 40 graduate students enrolled in an advanced course in information systems analysis and design. Each member of the expert group was assigned at random to judge the attributes of five web sites selected from the list of forty sites. Five experts judged each web site, but no two experts were allowed to judge the same set of five web sites. The order in which web sites appeared on the lists of the five experts was varied to control for biases caused by the order of presentation.
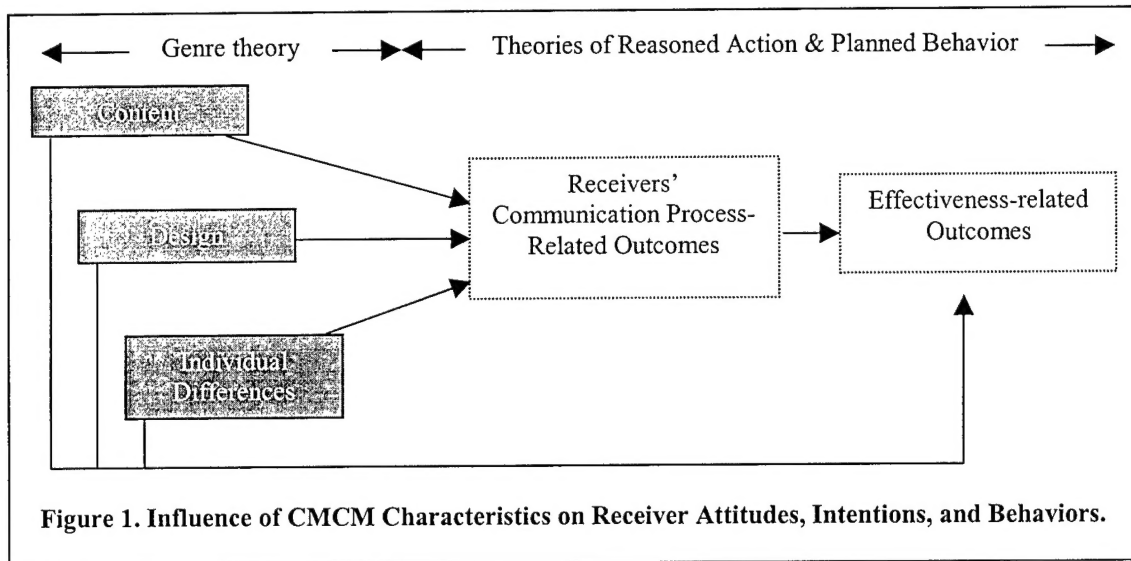
The second group examined subjective characteristics of the web sites (e.g., social presence, perceived richness, realism). This group, representing non-experts (or typical visitors to a web site), consisted of approximately 400 students enrolled in initial undergraduate courses intended to familiarize them with standard office software commonly available on personal computers. Undergraduate students with extensive IT experience were not allowed to participate in the study. Each non-expert was asked to navigate one of the forty websites, which was randomly assigned.

Instruments developed for both experts and non-experts were focused primarily on perceptions of web site outcomes and three types of web site attributes: content, presentation, and convenience. Ease-of-use and usefulness were also measured, as were the respondent's previous experience with Internet web sites and their perceived self-efficacy for using the Internet to accomplish their goals.

Differences between experts' and non-experts' perceptions and evaluations of web pages were analyzed using ANOVA. For each dependent variable, separate ANOVAs were used to compare the average expert ratings with the average ratings of non-experts across the forty web sites.

Relationships between web site characteristics and receiver reactions were assessed as follows. First, the group of 400 non-experts (ten per web site) was divided randomly into two groups of 200 non-experts (five per web site) to mitigate most of the negative affects of common method variance. For convenience, the two non-expert groups are labeled "A" and "B." Responses obtained from group "A" provided the criterion data (e.g., measures of usability, ease of use, usefulness, effectiveness, and satisfaction) for the forty web sites. Average attribute ratings for the web site characteristics (predictor variables reflecting content, presentation, and convenience) were obtained from group "B" and the experts. Hierarchical regression analysis is used to test the relative ability of attribute ratings made by experts and non-experts (from group "B" only) to explain variance in criterion measures obtained from non-experts in group "A."

ACCOMPLISHMENTS (throughout award period): The first accomplishment was the development of an integrated model of the influence of CMCM characteristics on receiver attitudes, intentions, and behaviors (Figure 1). The left portion of the model is based on genre theory (Yates and Orlikowski, 1992). Content consists of qualities of information contained in the web site (e.g., amount, type, complexity, diversity,

Figure 1. Influence of CMCM Characteristics on Receiver Attitudes, Intentions, and Behaviors.

specificity, uniqueness, and realism). Design consists of channel capacities (cue types) search capabilities, availability of two-way communication, interactiveness, convenience, and attractiveness. Individual differences include demographic variables such as gender, race, age, and education.

The right portion of the model is based on the Theories of Reasoned Action and Planned Behavior (Ajzen and Fishbein, 1980; Ajzen, 1991). Receivers' communication outcomes include perceptions (e.g., symbolic meaning and social presence), reactions (e.g., involvement and engagement), media judgments (e.g., useability, usefulness, and ease-of-use), and apprehension (e.g., recall, comprehension, ambiguity, and uncertainty). Effectiveness outcomes include attitudes toward communication (e.g., toward organization and pursuing employment), intentions (e.g., to acquire additional information, to return to web site, and to join organization), behavior (e.g., use of FAQ or e-mail), and receivers' overall judgments (e.g., effectiveness of web site, satisfaction with web site, and impressions).

The second accomplishment of the project was an examination of the relationships between CMCM characteristics and communication receiver outcomes described in Figure 1. Data describing those relationships were drawn from surveys of information systems experts and non-experts. Questions specific to non-experts allow an examination of media features on communication outcomes (Pitts et al., in progress), while questions directed at both groups allow a comparison of differences in perceptions of web site characteristics by IT experts and non-experts (Van Scotter et al., 2002; Van Scotter et al., work in progress).

The Role of Content, Form, and Functionality on Web Site Effectiveness. Results from this portion of the study (Pitts et al., work in progress) support the existence of generally expected relationships predicted by genre-oriented research. The results also infer the mediating role of perceptions of usefulness and ease-of-use between message content and form on the one hand, and web site effectiveness on the other.

Preliminary results demonstrate the importance of message content and form in explaining perceived usefulness and perceived ease-of-use constructs because they show the importance of inputs (rather than simply the processing mechanisms) to technology acceptance. For example, the importance of message content and form over media characteristics is supported by the low Δ adjusted R^2 values between web-browser self-effectiveness and the receiver variables of perceived usefulness, ease-of-use, and communication effectiveness.

Differences in perceptions of web site characteristics by IT experts and non-experts. This portion of the study (Van Scotter et al., 2002; Van Scotter et al., work in progress) is primarily exploratory in nature. The

perceptions of three groups of respondents (experts, and two groups of non-experts) are compared to eliminate most of the negative affects of common method variance. Preliminary results suggest that users focus more on content because it is more closely related to their purpose for visiting a web site while IT experts care more about design features (i.e., process-related aspects). Preliminary results also suggest that amount of information and perceived complexity explain more variance in user satisfaction than IT expert satisfaction.

SIGNIFICANCE:
The Role of Content, Form, and Functionality on Web Site Effectiveness. Results from this portion of the study (Pitts et al., in progress) provides an important extension of the Technology Acceptance Model (Davis, 1989) by showing that, in the case of web-based communication, perceived usefulness and ease-of-use are closely associated with variance in message content and form. This finding suggests that information systems researchers must pay more attention to what is said in the web site and how it is said, rather than what medium is used to say it. The study also shows the usefulness of genre research in conceptualizing past IS research (which has traditionally focused on underlying technologies) into a way that technologies are being used (e.g., how message content and form interacts with technology and the receiving audience).

Differences in perceptions of web site characteristics by IT experts and non-experts. The results of this portion of the study (Van Scotter et al., 2002; Van Scotter et al., work in progress) reveal the types of website characteristics that have significant effects on perceptions of usefulness, usability, ease of use satisfaction and effectiveness judgments of non-expert users. In addition, the study evaluates the relative influence of web site designers' and users' perceptions of web site attributes on judgments of web site usefulness, ease of use, satisfaction and effectiveness made by non-expert users. On-going analysis may show that the perceptions of IT experts are: 1) different and relevant; 2) different, but not relevant; or 3) not different from the perceptions of non-experts. If the results support the first situation, then both IT experts and non-experts can provide valuable data to inform web site design. If results support situation 2 or 3, designers are probably better off listening to users when it comes to designing interfaces. The more variance in outcomes explained by non-experts perceptions, the more important it is for web site designers to solicit their opinions and to allow users views to guide design goals and the design process. This study extends previous work showing that differences in experience and purposes for using information are important predictors of effectiveness and other outcomes. Future research should focus on sets of predictor variables that make a significant difference in these dependent variables.

PATENT INFORMATION: None.

AWARD INFORMATION: None.

REFEREED PUBLICATIONS (for total award period):

Van Scotter, J.R., Clark, P.W., Otondo, R.F., Allen, D.G., & Pitts, M.G. (August, 2002). Differences in Perceptions of Web Site Characteristics by IT Experts and Non-Experts. *Proceedings of the Americas Conference on Information Systems, Dallas, TX*.

BOOK CHAPTERS, SUBMISSIONS, ABSTRACTS AND OTHER PUBLICATIONS (for total award period)

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